

Operating Instructions
Bedienungsanleitung
Mode d'emploi
Istruzioni per l'uso

"This product is manufactured to comply with the radio interference requirements of EEC Directive 76/889/EEC and 82/499/EEC."

Thank you for buying this Pioneer product.

Please read these operating instructions thoroughly, so you will know how to operate your model properly. After you have finished reading the instructions, put them away in a safe place for future reference. For the sake of convenience, these operating instructions are based on the model HE, and they can be used for the HB, YP, KU, KC, S and S/G models.

The differences between the models are given below.

HE model:

For Europe excluding U.K. ('HE' stamped on packing case): Power line voltage is AC 220 volts.

HB model:

For U.K. ('HB' stamped on packing case): Power line voltage is AC 240 volts.

YP model:

For Australia ('YP' stamped on packing case): Power line voltage is AC 240 volts.

KU and KC models:

For U.S.A. and Canada ('KU' or 'KC' stamped on packing case): Power line voltage is AC 120 volts.

S and S/G models:

For destinations excluding above ('S' or 'S/G' stamped on packing case): A 4-point (110 V/120 V/220 V/240 V) voltage selector switch is provided.

NOTE:

Depending upon the model, the design of the power plug and the power outlet differs.

The line voltage selector switch is located on the rear panel of the unit. Please check that it is set properly before plugging the power cord into an outlet. If it is not set properly, change the setting according to the LINE VOLTAGE SELECTION.

IMPORTANT NOTICE (For KU and KC models)

The serial number for this equipment is located on the rear panel. Please write this serial number on your enclosed warranty card and keep in a secure place. This is for your security.

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

**STEREO DOUBLE CASSETTE
 TAPE DECK AMPLIFIER
 DC-110Z/DC-111Z**

**FM/AM DIGITAL SYNTHESIZER TUNER
 TX-220Z/TX-221Z
 TX-220ZL/TX-221ZL**

(Only available in European countries.)

**AM/FM STEREO TUNER
 TX-110Z/TX-111Z
 TX-110ZL/TX-111ZL**

(Only available in European countries.)

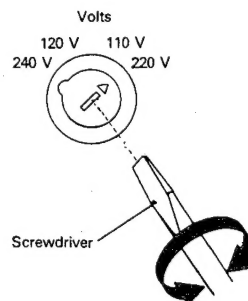
**STEREO TURNTABLE
 PL-220Z/PL-221Z
 PL-110Z/PL-111Z**

These operating instructions are applicable to all models listed above. Refer to the items corresponding to your model.

**LINE VOLTAGE SELECTION
 (S and S/G models only)**

Before your model is shipped from the factory, the switch is set to the power requirements of the destination; nevertheless, you should check that it is set properly before plugging the power cord into the AC outlet.

1. Disconnect the power cord.
2. Provide yourself with a medium size screwdriver.
3. Insert the screwdriver into the groove on the voltage selector and adjust to the voltage value of your area.



HE (for Europe excluding U.K.), HB (for U.K.), YP (for Australia), KU (for U.S.A.) and KC (for Canada) models are not provided with a LINE VOLTAGE SELECTOR switch.

ENGLISH

DEUTSCH

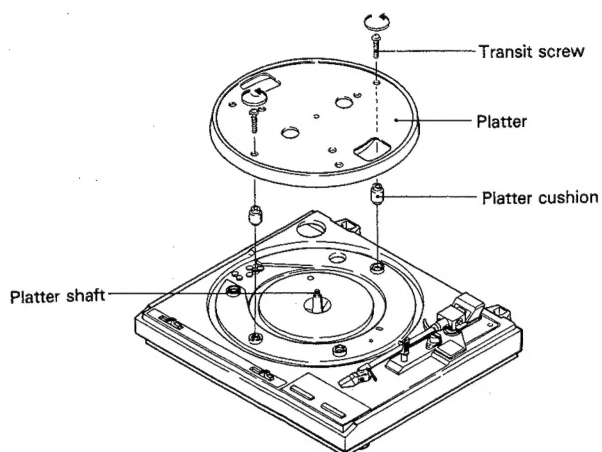
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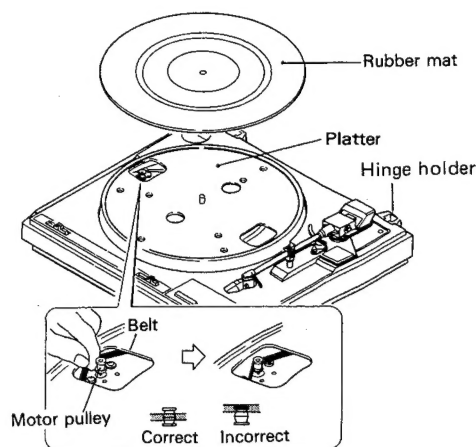
PIONEER®

INITIAL TURNTABLE SET-UP

1. Remove the dust cover by pulling it straight up from the cabinet.
2. Remove the transit screws, platter, and the platter cushions.
 - The turntable will not operate unless the transit screws are removed.
 - Keep the screws and cushions in a safe place, since they are required when transporting the turntable.
3. Place the platter over the platter shaft.



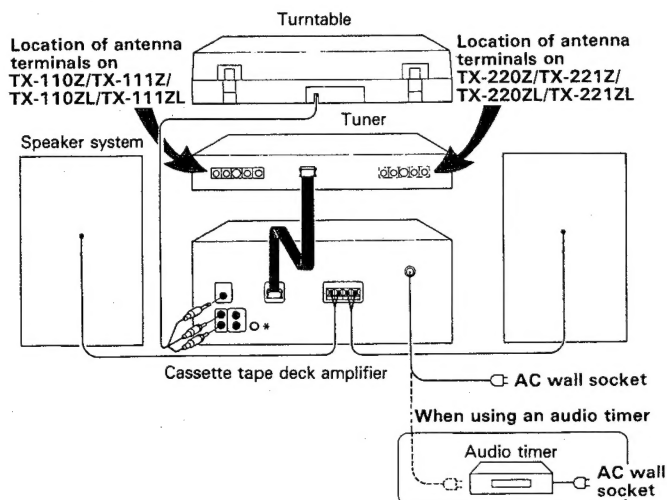
4. Place the belt over the motor pulley. Rotate the platter clockwise by hand and check that the belt has been placed over the motor pulley properly.
5. Place the rubber mat over the platter.
6. Mount the dust cover. Hold the dust cover and slide the hinges into the hinge holders.



CONNECTIONS

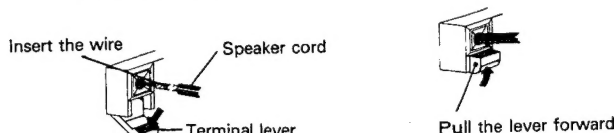
For details, refer to ANTENNA INSTALLATION on page 7 for the connection of the FM and AM antennas.

- Before performing connections, turn off the power switch of the cassette tape deck amplifier.
- Insert the plugs as far as they will go. An improper connection or poor contact will result in no sound, or will degrade the sound.
- Connect the white plug to the left channel and the red plug to the right channel.



CONNECTING THE SPEAKER CORDS

1. Push down on the terminal lever and insert the speaker wire into the hole.
2. Pull the terminal lever forward with your finger.



*REC VOLUME

REC VOLUME control adjusts recording level when recording from an equipment connected to the CD/VIDEO terminal. Set the volume knob completely turned clockwise (↻). If the recording level is too high, adjust the level turning the knob counter-clockwise (↺).

SAFETY INSTRUCTIONS

READ INSTRUCTIONS — All the safety and operating instructions should be read before the appliance is operated.

RETAIN INSTRUCTIONS — The operating instructions should be retained for future reference.

HEED WARNING — All warnings on the appliance and in the operating instructions should be adhered to.

FOLLOW INSTRUCTIONS — All operating and use instructions should be followed.

WATER AND MOISTURE — The appliance should not be used near water — for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.

LOCATION — The appliance should be installed in a stable location.

WALL OR CEILING MOUNTING — The appliance should not be mounted to a wall or ceiling.

VENTILATION — The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or, placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.

HEAT — The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.

POWER SOURCES — The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.

POWER-CORD PROTECTION — Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.

POLARIZATION — If your purchased product is provided with a polarized power plug, please read the following instructions. This product is equipped with a polarized alternating current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.

CLEANING — The appliance should be cleaned only with a polishing cloth or a soft dry cloth. Never clean with furniture wax, benzine, insecticides or other volatile liquids since they may corrode the cabinet.

POWER LINES — An outdoor antenna should be located away from power lines.

NONUSE PERIODS — The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.

OBJECT AND LIQUID ENTRY — Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.

DAMAGE REQUIRING SERVICE — The appliance should be serviced by Pioneer authorized service center or qualified service personnel when:

- The power-supply cord or the plug has been damaged; or
- Objects have fallen, or liquid has been spilled into the appliance; or
- The appliance has been exposed to rain; or
- The appliance does not appear to operate normally or exhibits a marked change in performance; or
- The appliance has been dropped; or the enclosure damaged.

SERVICING — The user should not attempt to service the appliance beyond that described in the operating instructions. For all other servicing, contact the nearest Pioneer authorized service center.

OUTDOOR ANTENNA GROUNDING — If an outside antenna is connected to the antenna terminal, be sure the antenna system is grounded so as to provide some protection against voltage surges and built up static charges.

In the U.S.A. section 810 of the National Electrical Code, ANSI/NEPA No. 70-1984, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode. See Fig. A.

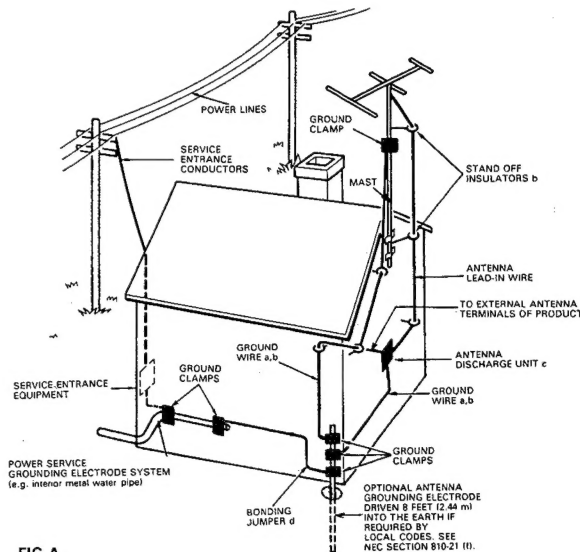


FIG. A

- Use No. 10 AWG (5.3 mm²) copper, No. 8 AWG (8.4 mm²) aluminum, No. 17 AWG (1.0 mm²) copper-clad steel, bronze wire, or larger as ground wire.
- Secure antenna lead-in and ground wires to house with stand-off insulators spaced from 4 feet (1.22 meters) to 6 feet (1.83 meters) apart.
- Mount antenna discharge unit as closely as possible to where lead-in enters house. Use jumper wire not smaller than No. 6 AWG (13.3 mm²) copper or equivalent when separate antenna-grounding electrode is used.

IMPORTANT 1



The lightning flash with arrowhead, within an equilateral triangle, is intended to alert the user of the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



CAUTION:
TO PREVENT THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



The exclamation point within an equilateral triangle is intended to alert the user of the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

IMPORTANT 2

If the apparatus is fitted with AC mains power outlet(s), see REAR PANEL FACILITIES for convenient connection of additional Hi-Fi component(s). Make all connections to the AC outlet(s) and the signal terminals first. Connect the plug to the wall socket last, make sure that the power switch is off. Disconnect the wall plug when the equipment is not in (regular) use, e.g. when on vacation.

FOR USE IN THE UNITED KINGDOM

The wires in this mains lead are coloured in accordance with the following code:

Blue: Neutral
Brown: Live

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured marking identifying the terminals in your plug proceed as follows:

The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.

The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

Equipment sold in the U.K. is not supplied with a power plug.

AM/FM CHANNEL STEP SWITCH

This switch is provided on models TX-220Z/Z and TX-221Z/Z only. The AM/FM channel step switch is located on the rear panel of the digital synthesized tuner. Before the tuner leaves the factory, this switch is set to the channel allotment plan of the area in which the tuner is sold. When the TUNING switch is given a single push, the frequency display will change in the following units.

Model destination	CHANNEL STEP switch position	Frequency change	
		FM mode	AM mode
Continental U.S.A.	100 kHz/10 kHz	100 kHz	10kHz
Other countries	50 kHz/9 kHz	50 kHz	9 kHz

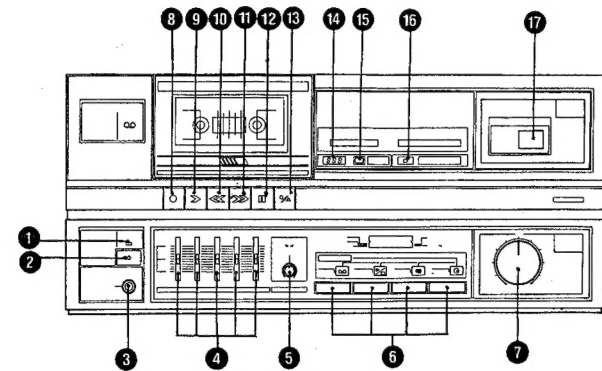
NOTE:

- If the TUNING switch is held in the depressed position, the frequency display will change continuously and stop when the switch is released.
- If the switch is set to the wrong position, correct tuning will not be possible.

Consult your dealer if you are not sure about the channel allotment plan in your area.

FRONT PANEL FACILITIES

STEREO CASSETTE TAPE DECK AMPLIFIER



- 1 POWER indicator
- 2 POWER switch
- 3 HEADPHONES jack
- 4 GRAPHIC EQUALIZER controls
By operating these five controls, equalization effects can be added to program source or tape playback sounds.
- 5 BALANCE control
- 6 FUNCTION switches
TAPE (∞): Push when playing back tapes.
CD/VIDEO (∞ ∞): Push when listening to a component connected to the CD/VIDEO terminals.
TUNER (*): Push when listening to broadcasts on the tuner.
PHONO (∅): Push when playing records on the turntable.
- 7 VOLUME control
- 8 REC switch (∅)
- 9 PLAY switch (>)
- 10 REW switch (<)

- 11 FF switch (>>)

- 12 PAUSE switch (||)

- 13 STOP/EJECT switch (<|)

- 14 TAPE COUNTER

- 15 RESET button
Push this button to reset the tape counter display to 000.

- 16 REC indicator
This lights during the recording mode.

- 17 *DOLBY NR switch
Push this switch to ON when recording with the built-in Dolby noise reduction system (B type), and when playing back tapes which have been recorded using the system.

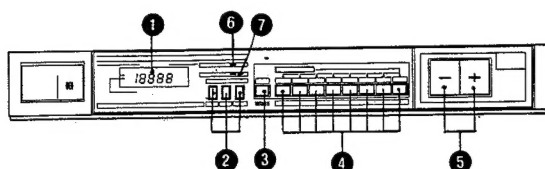
*Noise Reduction manufactured under license from Dolby Laboratories Licensing Corporation.

"Dolby" and the double-D symbol are trademarks of the Dolby Laboratories Licensing Corporation.

ENGLISH

FRONT PANEL FACILITIES

DIGITAL SYNTHESIZER TUNER [TX-220Z/TX-221Z/TX-220ZL/TX-221ZL]



NOTE:
The illustration is of the TX-220ZL/TX-221ZL.

1 FREQUENCY display

Permits reading the received frequency at a glance from the displayed figure. The FM band is indicated by MHz, and the AM or MW/LW band by kHz.

2 FUNCTION switch

MW: Push to receive MW band broadcasts.
LW: Push to receive LW band broadcasts.
FM: Push to receive FM band broadcasts.

Only AM/FM switching is available for the TX-220Z/TX-221Z models.

3 MEMORY switch

Push to operate the memory circuit. After the switch is pressed, the memory circuit will function for about ten seconds. During this time, press one of the STATION CALL switches to memorize the station being currently received. If more than ten seconds elapses after the MEMORY switch is pressed, no stations can be memorized. In this case, press the MEMORY switch again if you wish to memorize a station.

4 STATION CALL switches

These are used to preset and recall broadcasting stations. A total of 16 stations can be preset [FM: 8, AM (MW or LW): 8].

- To tune in to a prememorized station, push the appropriate STATION CALL switch.
- Once the stations have been preset, all you have to do to recall them is push the STATION CALL switch.

5 TUNING switches

These are used to locate the stations. Push either of these two switches; the left switch "—" to go to a lower, and the right switch "+" to go to a higher frequency.

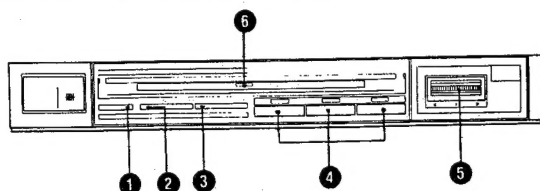
6 TUNED indicator

This lights to indicate when the finest tuning of a station has been achieved.

7 STEREO indicator

This lights when a stereo program has been picked up during an FM broadcast.

STEREO TUNER [TX-110Z/TX-111Z/TX-110ZL/TX-111ZL]



NOTE:
The illustration is of the TX-110ZL/TX-111ZL.

1 POWER indicator

2 TUNED indicator

This lights up to indicate when finest tuning of a station has been achieved.

3 STEREO indicator

This lights when a stereo program has been picked up during an FM broadcast.

4 Function switch

MW: Push to receive MW band broadcasts.
LW: Push to receive LW band broadcasts.
FM: Push to receive FM band broadcasts.

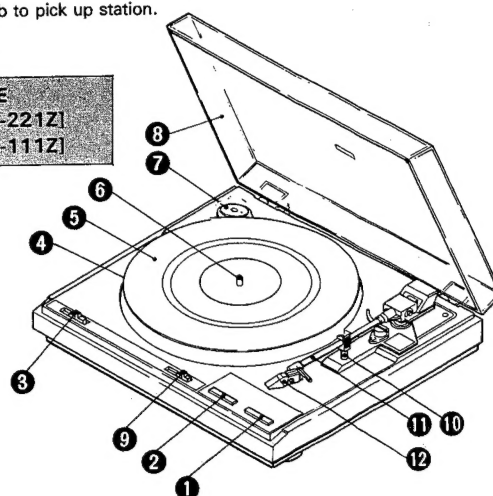
Only AM/FM switching is available for the TX-110Z/TX-111Z models.

5 Tuning knob

Rotate this knob to pick up station.

6 Dial pointer

TURNTABLE [PL-220Z/PL-221Z] [PL-110Z/PL-111Z]



NOTE:
Illustration shows the PL-220Z/PL-221Z.

*1 START/STOP switch (Only PL-220Z/PL-221Z)

Press this switch when starting auto play or when stopping play.

NOTE:
On the PL-110Z and PL-111Z, this switch is the STOP switch as well.

*2 DISC SIZE switch (Only PL-220Z/PL-221Z)

Set this switch in accordance with the size of the record.
30 (■): For 30 cm LP records. 17 (■): for 17 cm EP records.

3 SPEED switch

Set this switch in accordance with the speed of the record.
33: For 33-1/3 rpm records. 45: For 45 rpm records.

4 Platter

5 Rubber mat

6 Platter shaft

7 EP adaptor

8 Dust cover

9 ARM elevation switch

10 Arm rest and clumper

Clumper is not provided on PL-110Z/PL-111Z.

11 Tonearm

12 Cartridge

***NOTE:**
PL-110Z/PL-111Z are not equipped with features 1 and 2.

OPERATIONS

- Set the cassette tape deck amplifier's POWER switch to ON.
- Adjust the volume with the VOLUME control and tone with the GRAPHIC EQUALIZER controls on the cassette tape deck amplifier.

DC-110Z/DC-111Z

TAPE PLAYBACK

1. Push the FUNCTION switch in the TAPE position.
2. Load a pre-recorded cassette tape.
3. Select the DOLBY NR switch position.
4. Push the PLAY switch.
5. Push the STOP/EJECT switch to stop the tape playback.

RECORDING

1. Set the FUNCTION switch to the position corresponding to the recording program source (CD/VIDEO, TUNER, or PHONO).
2. Load a non-recorded cassette tape.
3. Select the DOLBY NR switch position.
4. Push the REC switch.
5. Push the STOP/EJECT switch to stop the recording.

NOTE:

Graphic equalizer effects can be added to the speaker output, but such effects cannot be recorded on the tape.

Auto Tape Selector

The purpose of the auto tape selector provided on this machine is to select automatically between normal and metal tapes.

Using the graphic equalizer

By using the five controls on the graphic equalizer, it is possible to boost certain frequencies and attenuate others. This function can be used to perform precise tone adjustment not possible with ordinary tone controls. By looking at the position of the sliding controls, adjustments to the output spectrum are visible at a glance. The center ("0") position of each control is the standard setting.

Auto-Stop Mechanism

When the tape is fully wound onto one reel during recording, playback, fast forward, or rewind, the auto-stop mechanism operates to release the tape mechanism and bring the tape to a stop without having to press the STOP switch.

This mechanism prevents the tape from becoming stretched and the pinch rollers from being deformed.

Erasing the tape

When recording on a previously recorded tape, the previously recorded sounds will be erased and new recording entered on the tape. To erase a previously recorded tape without recording anew, perform the following operations:

1. Load the cassette tape.
2. Push the FUNCTION switch in the TAPE position.
3. Push the REC switch to begin erasing.

TX-110Z/TX-111Z/TX-110ZL/TX-111ZL

FM AND AM (MW/LW) RECEPTION

1. Push the FUNCTION switch in the TUNER position on the cassette deck amplifier.
2. Push the appropriate function switch on the stereo tuner.
3. Rotate the tuning knob and tune in the desired station.

TX-220Z/TX-221Z/TX-220ZL/TX-221ZL

FM AND AM (MW/LW) RECEPTION

Manual Tuning

1. Push the FUNCTION switch in the TUNER position on the cassette deck amplifier.
2. Push the appropriate function switch on the stereo tuner.
3. Push the TUNING switches ("—" or "+") and tune in the desired station.

Memory tuning

1. Push the FUNCTION switch in the TUNER position on the cassette deck amplifier.
2. Push the appropriate function switch on the stereo tuner.
3. Push the TUNING switches ("—" or "+") to tune in the station you wish to memorize.
4. Push the MEMORY switch. During the approximate ten seconds which the memory circuit functions, push the desired STATION CALL switch to memorize the current frequency in that switch.
5. Repeat steps 3 and 4 for each STATION CALL switch. The previous memory will be erased when a new frequency is committed to the memory of the same STATION CALL switch. An erasure cannot be made without a new input.

- The electrical circuit controlling the MEMORY function is powered by a back-up condenser so that the unit will retain preset stations for a number of days. If a preset station has been erased, reset it.

ENGLISH

OPERATIONS

PL-110Z/PL-111Z

RECORD PLAY

1. Push the FUNCTION switch in the PHONO position on the cassette deck amplifier.
2. Place the record on the rubber mat.
3. Remove the stylus cover.
4. Set the SPEED switch.
5. Move the tonearm by hand to the record. At this stage, the turntable starts to rotate.
6. Set the ARM elevation switch to the DOWN position.

PL-220Z/PL-221Z

RECORD PLAY

1. Push the FUNCTION switch in the PHONO position on the cassette deck amplifier.
2. Place the record on the rubber mat.
3. Remove the stylus cover and release the clasper.
4. Set the SPEED and DISC SIZE switches.
5. Set the ARM elevation switch to the DOWN position.
6. Push the START/ STOP switch to start record play.

NOTE:

- When play is completed, the tonearm will return automatically to the arm rest.
- When playing 45 rpm records with large center holes, place the EP adaptor onto the platter shaft.

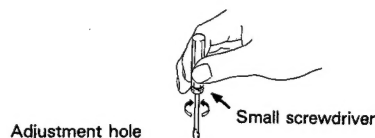
To interrupt the playing of a record

Set the ARM elevation switch to the UP position to lift the tonearm. The tonearm will descend slowly and resume playing in the same groove when the ARM elevation switch is set to the DOWN position.

ADJUSTING THE STYLUS DESCENT POSITION

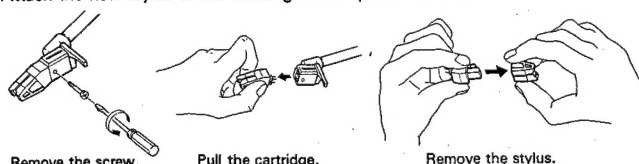
Proceed as follows when the stylus does not descend at the proper position on the record during auto play. While performing the adjustment, take care not to scratch the record with the stylus.

1. Place a 30 cm LP record on the platter.
2. Push the START/STOP switch to start auto play. Check the direction and amount of stylus deviation (how many millimeters toward the inside or outside of the record's lead-in groove).
3. Push the START/ STOP switch to return the tonearm to the arm rest.
4. Set the ARM elevation switch to the UP position and manually move the tonearm across the outside edge of the record.
5. Rotate the screw with a small screwdriver in accordance with the direction of the deviation observed in step 2.
 - Rotate the screw clockwise if the stylus descends on the outside of the proper position.
 - Rotate the screw counterclockwise if the stylus descends on the inside of the proper position.
6. Manually return the tonearm to the arm rest and set the ARM elevation switch to the DOWN position.
7. Push the START/STOP switch and check that the stylus stops at the lead-in groove on the outer circumference of the record. If the position is still not correct, repeat steps 2 to 6.



REPLACING THE STYLUS

1. Remove the screw.
2. Pull the cartridge.
3. Remove the stylus gently.
4. Attach the new stylus to the cartridge and replace the screw.



Remove the screw.

Pull the cartridge.

Remove the stylus.

MAINTENANCE

CLEANING THE HEAD SECTION

The heads, capstan and pinch roller are parts which are liable to get dirty quite easily. In particular, if the heads are dirty, the high frequency components of the sound will not be reproduced and the stereo balance will be impaired, resulting in a deterioration in sound quality. It is therefore recommended that the head section be cleaned regularly.

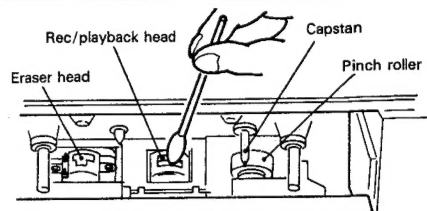
1. Push the STOP/EJECT switch to open the cassette door.
2. Dip a cleaning swab into the cleaning fluid and use it to wipe the heads, capstan, and pinch roller.

DEMAGNETIZING THE HEAD

The rec/playback head becomes magnetized when you use the tape deck for prolonged periods of time. This results in noise being generated and the treble dropping off during recording and playback. The rec/playback head should therefore be demagnetized regularly with a head demagnetizer (sold separately). For further details, refer to the operating instructions accompanying your head demagnetizer.

NOTE:

- Do not hold screwdrivers, metal objects, or magnets close to the heads.
- When demagnetizing the heads, be sure the unit's POWER switch is in the OFF position.



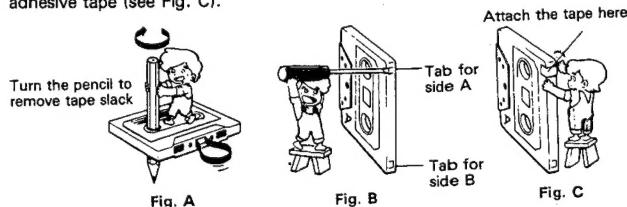
CASSETTE TAPES

Slack or Protruding Tape

If any tape is protruding from the cassette as shown in Fig. A or is slack, the tape may run without passing between the capstan and pinch roller and so may be damaged. Take up any slack by inserting a pencil through the reel hub and turning it as shown in Fig. A. Some tapes have a tape stopper to prevent tape slack. Make sure it is removed before loading the tape into the deck.

Erasure Prevention Tabs

Cassette tapes are provided with erasure prevention tabs (see Fig. B) which act as a protection device to prevent valuable recordings from being accidentally erased. If these tabs are removed with a screwdriver as shown in Fig. B, you will be able to prevent any erasure of programs even if you accidentally set the tape deck to the recording mode by pushing the REC switch. To re-record a tape which has had its tabs removed, cover the tab opening with a double layer of adhesive tape (see Fig. C).



NOTE:

- The service life of the stylus on the supplied cartridge ranges from 800 to 1,000 hours.
- Using a worn or damaged stylus can damage your records and distort the sound reproduction. Remember to replace the stylus at the earliest possible date.
- Always use the PIONEER "PN-290T" as a replacement stylus.
- Always ask for a genuine PIONEER replacement stylus.



is the universal mark for the Plug-in connector system. Products carrying this mark are interchangeable and can be used together.

ANTENNA INSTALLATION

AM LOOP ANTENNA INSTALLATION

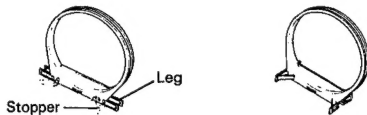
The AM loop antenna is supplied with the stereo tuner. Connect the AM loop antenna to the AM antenna terminals.

NOTE:

- Do not install the AM loop antenna in a location where it may come in contact with any metal objects.
- Keep the AM loop antenna connected even after an AM outdoor antenna has been erected.

AM LOOP ANTENNA

- Unfold all four legs of the AM loop antenna toward the outside, and insert the stopper inside the legs into the hole in the AM loop antenna to fix it in position.
- Set the antenna on a level surface, and point in the direction that gives optimum reception.
- Do not install the antenna in locations where it touches the metal objects, or near a CD player, personal computer, or television set.



AM OUTDOOR ANTENNA

In areas with strong radio waves, the accessory AM loop antenna will be sufficient for radio reception. In the event that nearby buildings or objects make reception difficult, or when distance from broadcasting stations results in weak radio waves, an outdoor AM antenna should be installed.

T-TYPE FM ANTENNA INSTALLATION

The T-type FM antenna is supplied with the stereo tuner. This should be used as a stopgap antenna until an outdoor FM antenna is erected.

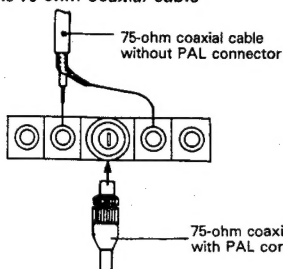
- Connect the two leads of the T-type FM antenna to the terminals marked BAL 300 ohms on the tuner's rear panel.
- Spread the two ends of the T-type FM antenna horizontally and secure the antenna to a wall, etc.

EXTERNAL FM ANTENNA INSTALLATION

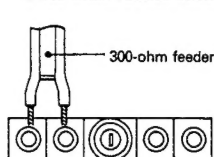
Use an external antenna when the signals from the station are weak and cannot be picked up by the accessory T-type FM antenna, or when the sound heard is accompanied by large amounts of noise. There are two ways of connecting the external FM antenna to the ANTENNA terminals: with 300-ohm feeder wire, or with a 75-ohm coaxial cable.

It is recommended that you use the 75-ohm coaxial cable so that the effects of extraneous noise are reduced to a minimum.

When the connecting cable is 75-ohm coaxial cable



When the connecting cable is a 300-ohm feeder wire



Notes concerning the antenna terminals:

- The PAL connector is provided only on tuners with LW reception.
- Depending on the model, antenna terminals differ as shown below:

TX-110Z/TX-111Z/TX-110ZL/TX-111ZL TX-220Z/TX-221Z/TX-220ZL/TX-221ZL



RECORDING AND PLAYBACK USING AN AUDIO TIMER

- Connect the power cord of the cassette tape deck amplifier to the audio timer (See page 2).
- Operation may vary depending on the audio timer; be sure to consult the operating instructions for the audio timer.

UNATTENDED RECORDING

- Set the POWER switch to ON.
- Load a non-recorded (blank) tape.
- Push the FUNCTION switch in the TUNER position on the cassette deck amplifier and operate the tuner to tune in the station whose program is to be recorded.
- Set the time on the audio timer so that the power comes on at the desired time (this action switches off the power to the cassette deck amplifier).
- Push the REC switch.
- At the preset time, the power will be switched on and recording will start automatically.

WAKE-UP PLAYBACK

- Set the POWER switch to ON.
- Load a pre-recorded cassette tape.
- Push the FUNCTION switch in the TAPE position on the cassette deck amplifier and adjust the VOLUME control to the appropriate level.
- Set the time on the audio timer so that the power comes on at the desired time (this action switches off the power to the cassette deck amplifier).
- Push the PLAY switch. At the preset time, the power will be switched on and the playback will start automatically.

SPECIFICATIONS

DC-110Z/DC-111Z

AMPLIFIER SECTION

Continuous Average Power Output is 25 Watts* per channel, min., at 8 ohms from 40 Hertz to 20,000 Hertz, with no more than 0.3% total harmonic distortion.

*Measured pursuant to the Federal Trade Commission's Trade Regulation rules on Power Output Claims for Amplifiers.

Continuous Power Output

40 to 20,000Hz	25 W + 25 W (T.H.D. 0.3% 8 ohms)
1 kHz (DIN)	32 W + 32 W (T.H.D. 1% 8 ohms)
1 kHz (DIN music power)	45 W + 45 W (T.H.D. 1% 8 ohms)
Hum and Noise (IHF, short-circuited, A network)	
PHONO	72 dB
Hum and Noise (DIN continuous Power/50 mV)	
PHONO	68 dB/60 dB
Total Harmonic Distortion (40 Hz to 20,000 Hz, 8 ohms), from CD/VIDEO	
12.5 Watts per channel power output	No more than 0.2%

ENGLISH

SPECIFICATIONS

Tape Deck Section

Systems	4 track, 2-channel stereo
Heads	"Hard Permalloy" recording/playback head x 1 "Ferrite" erasing head x 1
Motor	DC servo motor x 1
Wow and Flutter	No more than 0.08% (WRMS) No more than $\pm 0.20\%$ (DIN)
Fast Winding Time	Approximately 115 seconds (C-60 tape)
Frequency Response	
-20 dB recording:	
Normal tape	35 to 13,000 Hz
Metal tape	35 to 15,000 Hz
Signal-to-Noise Ratio	
Dolby NR OFF	More than 55 dB
Noise Reduction Effect	
Dolby NR B type ON	More than 10 dB (at 5 kHz)

Furnished Parts

Operating Instructions	1
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Miscellaneous

Power requirements	
KU and KC models	AC 120 V, 60 Hz
HE model	AC 220 V, 50/60 Hz
HB and YP models	AC 240 V, 50/60 Hz
S and S/G models	AC 110 V/120 V/220 V/240 V, 50/60 Hz (switchable)

Power Consumption

KU model	199 W
KC model	199 W
HE, HB, and YP models	270 W
S and S/G models	199 W
Dimensions	420(W) x 188(H) x 224 (D) mm 16-9/16(W) x 7-6/16(H) x 8-13/16(D) in
Weight (without package)	5.5 kg (12 lb 2 oz)

TX-220Z/TX-221Z/TX-220ZL/TX-221ZL

FM Tuner Section

Frequency range	87.5 MHz to 108 MHz
Usable Sensitivity	11.2 dBf, IHF (1.0 μ V/75 ohms)
Sensitivity (DIN)	Mono: 0.9 μ V/75 ohms Stereo: 31.5 μ V/75 ohms
Signal-to-Noise Ratio (IHF, 85 dBf Input)	Mono: 77 dB Stereo: 73 dB
Signal-to-Noise Ratio (DIN)	Mono: 66 dB Stereo: 60 dB
Distortion	Stereo: 0.4% (1 kHz)
Alternate Channel Selectivity	67 dB (400 kHz)
Stereo Separation	40 dB (1 kHz)
Antenna Input	300 ohm balanced 75 ohm unbalanced

MW Tuner Section

Frequency range	530 kHz to 1600 kHz when 10 kHz step 531 kHz to 1602 kHz when 9 kHz step
Sensitivity (IHF, Loop antenna)	300 μ V/m
Signal-to-Noise Ratio	50 dB
Antenna	Loop Antenna

LW Tuner Section (For LW-equipped models only)

Frequency range	153 kHz to 281 kHz
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Miscellaneous

Dimensions	420(W) x 58(H) x 215(D) mm 16-9/16(W) x 2-5/16(H) x 8-7/16(D) in
Weight (without package)	1.9 kg (4 lb 3 oz)

Furnished Parts

FM T-type Antenna	1
AM Loop Antenna	1
Connection Cord	1

TX-110Z/TX-111Z/TX-110ZL/TX-111ZL

FM Tuner Section

Frequency range	87.5 MHz to 108 MHz
Usable Sensitivity	15.3 dBf, IHF (1.6 μ V/75 ohms)
Sensitivity (DIN)	Mono: 1.3 μ V/75 ohms Stereo: 35.4 μ V/75 ohms
Signal-to-Noise Ratio (IHF, 85dBf Input)	Mono: 77 dB Stereo: 73 dB
Signal-to-Noise Ratio (DIN)	Mono: 66 dB Stereo: 60 dB
Distortion	Stereo: 0.4 (1 kHz)
Alternate Channel Selectivity	55 dB (400 kHz)
Stereo Separation	40 dB (1 kHz)
Antenna Input	300 ohm balanced 75 ohm unbalanced

MW Tuner Section

Frequency range	531 kHz to 1602 kHz
Sensitivity (IHF, Loop antenna)	250 μ V/m
Signal-to-Noise Ratio	50 dB
Antenna	Loop Antenna

LW Tuner Section (For LW-equipped models only)

Frequency range	153 kHz to 281 kHz
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Miscellaneous

Dimensions	420(W) x 58(H) x 216.5(D) mm 16-9/16(W) x 2-5/16(H) x 8-8/16(D) in
Weight (without package)	1.8 kg (4 lb)

Furnished Parts

FM T-type Antenna	1
AM Loop Antenna	1
Connection Cord	1

PL-220Z/PL-221Z/PL-110Z/PL-111Z

Drive System	Belt drive
Speeds	33-1/3 and 45 rpm
Wow and Flutter	Less than 0.05% (WRMS) $\pm 0.07\%$ WTD Peak (DIN)
Signal-to-Noise Ratio	More than 68 dB (DIN-B) (with Pioneer cartridge model PC-290T)
Usable cartridge	T4P cartridge

PC-290T Specifications

Type	IM type
Stylus	0.6 mil diamond (PN-290T)
Output Voltage	2.5 mV (1 kHz, 5cm/s LAT. Peak)
Frequency Response	10 to 30,000 Hz
Recommended Load	50 kohms

Miscellaneous

Power Requirements	DC 12V
Dimensions	420(W) x 108(H) x 374(D) mm 16-9/16(W) x 4-4/16(H) x 14-12/16(D) in
Weight	3.7 kg (8 lb 3 oz)

Accessories

EP Adaptor	1
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NOTE:

Specifications and design subject to possible modification without notice due to improvements.